

# PATENT SPECIFICATION

NO DRAWINGS

Inventor: NORMAN SENIOR

835,473



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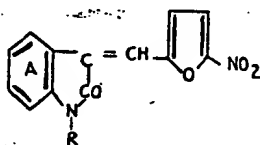
## COMPLETE SPECIFICATION

### Antibacterial Compositions

We, IMPERIAL CHEMICAL INDUSTRIES LIMITED, of Imperial Chemical House, Millbank, London, S.W.1, a British Company, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to antibacterial compositions and more particularly it relates to antibacterial and antiseptic cleansing compositions comprising certain 3 - (5<sup>1</sup> - nitro - 2<sup>1</sup> - furfurylidene) - oxindole derivatives.

In United Kingdom Patent Specification No. 809,691 there have been described and claimed new indole derivatives of the formula:—



wherein R stands for hydrogen or for an acyl group and wherein the nucleus A may optionally bear substituents, and processes for their manufacture. The new indole derivatives are therein stated to be useful as antibacterial agents especially for antiseptic purposes, and there are described and claimed antimicrobial compositions wherein the active ingredient is at least one of the said new indole derivatives. Such compositions as are specifically described and claimed include solutions in polyethylene glycol optionally containing wetting agents, aqueous dispersions containing dispersing or surface-active agents and/or other water miscible ingredients, oily solutions, creams, ointments and pastes.

The new indole derivatives described and claimed in the said Patent Specification are but sparingly soluble in water and in media

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which are predominantly aqueous. Nevertheless we have found that the antibacterial activity of the said new indole derivatives is so high that even at the excessive dilutions which are obtainable in aqueous media there is a useful and effective antibacterial and antiseptic effect. We have further found that, unlike many of the hitherto known antibacterial substances the antibacterial activity of the said new indole derivatives is not substantially diminished in the presence of soap. Thus we have found that the said new indole derivatives are very suitable for incorporation into soaps and soap-like materials for the production of antibacterial and antiseptic cleansing compositions for example medicated toilet soaps, antiseptic soaps, antiseptic tooth-pastes and tooth-powders and the like.

Thus according to the invention we provide new antiseptic and antibacterial cleansing compositions which comprise as active ingredient not more than 5% by weight of one or more compounds formulated above and which comprise also a soap.

The preferred compound of the stated formula is 3 - (5<sup>1</sup> - nitro - 2<sup>1</sup> - furfurylidene) - oxindole.

By the term soap there are to be understood salts of long chain fatty hydrocarbon acids. The salts may be mineral salts, for example alkali metal, for example sodium or potassium salts, or they may be salts of organic bases for example triethanolamine. The long chain fatty hydrocarbon acids may be carboxylic acids or they may be sulphonic acids and the long fatty hydrocarbon chain may be saturated or unsaturated and may be interrupted by aromatic nuclei or by atoms other than carbon, for example by oxygen or sulphur.

Thus as soaps there may be used for example the commonly available products obtained by hydrolysis of natural or animal fats and oils by means of alkalis and there may be

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used those soaps from which glycerol has been removed and also those from which it has not been removed. There may also be used as soaps for example the salts of sulphonated long chain hydrocarbons and of sulphonated long chain aliphatic alcohols.

The soap may also be obtained, if desired *in situ*, by interaction of an appropriate base, for example triethanolamine, with an appropriate long fatty chain acid, for example stearic acid.

There may be present in the compositions of the invention optionally further ingredients, for example perfumes, diluents, flavouring agents and the like, according to the purpose for which the composition is to be used.

The compositions of the invention may be solid compositions, in which case they may be formed solids, as for example soap cakes, or they may be powders as for example in soap or dental powders and the like. Again the compositions may be semi-solid or cream- or past-like in consistency as for example they may be medicated soft soaps, vanishing creams, tooth-pastes and the like. The compositions of the invention may also be liquid as for example they may be tinctures or liniments.

The compositions of the invention are, by reason of the presence of the said new indole derivatives, effectively antiseptic and antibacterial to a surprising degree in addition to being effective cleansing compositions. Furthermore they do not exert any deleterious effect on the skin or mucous membranes, whether whole or damaged, and they are therefore very useful in medical and veterinary practice in the antiseptic treatment of wounds or of the skin pre- or post-operatively, or in the washing of the surgeon's hands or instruments. They are also useful in many aspects of personal hygiene, as in shampoos, tooth-pastes and tooth-powders, enemata, douches and the like.

The invention is illustrated but not limited by the following Examples in which the parts are by weight:—

#### EXAMPLE 1

0.1 Part of 3 - (5<sup>1</sup> - nitro - 2<sup>1</sup> - furfurylidene)oxindole is incorporated in 99.9 parts of toilet soap chips and the mixture is compounded into soap cakes according to the art to give a medicated soap for toilet use.

#### EXAMPLE 2

0.1 Part of finely divided 3 - (5<sup>1</sup> - nitro - 2<sup>1</sup> - furfurylidene)oxindole is incorporated in 99 parts of curd soap and there is thus obtained an antiseptic soap for medical or veterinary use.

#### EXAMPLE 3

2.0 Parts of 3 - (5<sup>1</sup> - nitro - 2<sup>1</sup> - furfurylidene)oxindole is mixed with 98 parts of soft soap and there is thus obtained an antiseptic soft soap for medical or veterinary use.

#### EXAMPLE 4

A solution of 30 parts of soft soap in 50 parts of alcohol (90%) is allowed to stand overnight. The clear solution is decanted and 20 parts of Oil of Lavender is added to it. To the resulting solution 0.2 part of 3 - (5<sup>1</sup> - nitro - 2<sup>1</sup> - furfurylidene)oxindole is added and the cooled solution is adjusted to 100 parts by the addition of alcohol (90%). There is thus obtained an antiseptic tincture of soft soap suitable for medical or veterinary use.

#### EXAMPLE 5

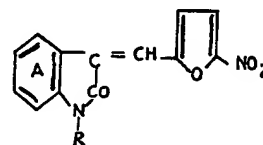
A dispersion of 0.01 part of finely divided 3 - (5<sup>1</sup> - nitro - 2<sup>1</sup> - furfurylidene)oxindole in 1 part of water is pasted with 47 parts of precipitated chalk and sufficient water is added to give a uniform mixture when milled. The mixture is then compounded with 3 parts of neutral soap, 22 parts of glycerol and 1.0 part of tragacanth. Sufficient water is added to give a smooth and uniform paste. A flavouring agent is added and the mass is adjusted to 100 parts by the addition of water. There is thus obtained a tooth-paste with antiseptic properties.

#### EXAMPLE 6

A dispersion of 0.1 part of finely divided 3 - (5<sup>1</sup> - nitro - 2<sup>1</sup> - furfurylidene)oxindole in a solution of 0.8 part of triethanolamine in 70 parts of water at 65° C. is added with stirring to a liquid mixture of 10 parts of arachis oil and 10 parts of stearic acid, at 60° C. The mixture is stirred well, adjusted to 100 parts by the addition of water at 65° C., stirred until uniform and then cooled and homogenised to give a vanishing cream with deodorant properties and antiseptic properties.

#### WHAT WE CLAIM IS:—

1. Antiseptic and antibacterial cleansing compositions which comprise as active ingredient not more than 5% by weight of one or more compounds of the formula:—



wherein R stands for hydrogen or for an acyl group and wherein the nucleus A may optionally bear substituents and which comprise also a soap.

2. Antiseptic and antibacterial cleansing compositions as claimed in Claim 1 wherein the active ingredient is 3 - (5<sup>1</sup> - nitro - 2<sup>1</sup> - furfurylidene)oxindole.

3. Antiseptic and antibacterial cleansing compositions as claimed in Claims 1 and 2 wherein the soap is a mineral salt or an organic base salt of a long chain fatty hydrocarbon acid.

4. Compositions as claimed in Claim 3 wherein the long chain fatty hydrocarbon acid is a carboxylic acid or a sulphonic acid where-  
 5 in the long fatty hydrocarbon chain may be saturated or unsaturated, and may be interrupted by aromatic nuclei or by atoms other than carbon, for example by oxygen or sulphur.
- 10 5. Antiseptic and antibacterial cleansing compositions according to Claims 1—4 wherein there are present also perfumes, diluents, flavouring agents and the like.
- 15 6. Antiseptic and antibacterial cleansing compositions as claimed in Claims 1—5 which are in the form of powders, soap cakes or other solid compositions.
7. Antiseptic and antibacterial cleansing compositions as claimed in Claims 1—5 which are in the form of toothpastes, vanishing creams, medicated soft soaps or other semi-solid, cream- or paste-like compositions.
8. Antiseptic and antibacterial cleansing compositions as claimed in Claims 1—5 which are in the form of linaments, tinctures or other liquid compositions.
9. Antiseptic and antibacterial cleansing compositions as claimed in Claims 1—8 and as hereinbefore described, especially with reference to the foregoing Examples.
10. Process for the manufacture of the antiseptic and antibacterial cleansing compositions claimed in Claims 1—9 as hereinbefore described, especially with reference to the foregoing Examples.

ALFRED O. BALL,  
Agent for the Applicants.

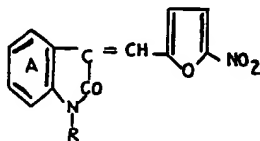
## PROVISIONAL SPECIFICATION

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45 In co-pending Application No. 17752/56 (Serial No. 809,691) there have been described and claimed new indole derivatives of the formula:—



50 wherein R stands for hydrogen or for an acyl group and wherein the nucleus A may optionally bear substituents, and processes for their manufacture. The new indole derivatives are therein stated to be useful as antibacterial agents especially for antiseptic purposes and there are described and claimed antimicrobial compositions wherein the active ingredient is at least one of the said new indole derivatives.

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60 The new indole derivatives described and claimed in the said co-pending application are but sparingly soluble in water and in media which are predominantly aqueous. Nevertheless we have found that the antibacterial ac-

tivity of the said new indole derivatives is so high that even at the excessive dilutions which are obtainable in aqueous media there is a useful and effective antibacterial and antiseptic effect. We have further found that, unlike many of the hitherto known antibacterial substances the antibacterial activity of the said new indole derivatives is not substantially diminished in the presence of soap. Thus we have found that the said new indole derivatives are very suitable for incorporation into soaps and soap-like materials for the production of antibacterial and antiseptic cleansing compositions for example medicated toilet soaps, antiseptic soaps, antiseptic toothpastes and tooth-powders and the like.

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